

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A lift assembly adapted to be affixed to a vehicle for movement of a load between raised and lowered positions, said lift assembly comprising:

mounting structure attachable to said vehicle;

carriage structure associated with said mounting structure, said carriage structure movable along said mounting structure between a stowed position and a deployed position;

platform structure having opposite first and second sides and inboard and outboard ends, said platform structure being pivotally coupled to said carriage structure for movement between raised and lowered positions and a stowable position existing in-between said raised and lowered positions;

first and second handrails pivotally coupled to said platform structure, said first and second handrails being movable between an extended position in which said first and second handrails extend upwardly from said platform structure, and a retracted position in which said first and second handrails are arranged along said first and second sides of said platform structure, respectively, wherein movement of at least one handrail to said extended position automatically locks said handrail in said extended position;

a first drive assembly conditionally operated for effecting reciprocal movement of said carriage structure between said stowed and deployed positions; and

a second drive assembly conditionally operated for effecting reciprocal movement of said platform structure between said raised and lowered positions.

2. The lift assembly of Claim 1, further comprising a handrail release lever associated with said platform structure, wherein movement of said handrail release lever unlocks said handrail, thereby allowing said handrail to move from said extended position to said retracted position.

3. The lift assembly of Claim 1, wherein said handrail is locked in said extended position by a lock assembly, said lock assembly comprising:

a latch engagement member associated with said first or second handrail; and

a latch biased into engagement with said latch engagement member when said handrail has attained said extended position, thereby locking said handrail in said extended position.

4. The lift assembly of Claim 3, further comprising a handrail release lever associated with said platform structure, wherein movement of said handrail release lever disengages said latch from said latch engagement member, thereby unlocking said handrail so that said handrail may articulate to said retracted position.

5. The lift assembly of Claim 4, further including handrail release linkage interconnecting said handrail release lever and said latch.

6. The lift assembly of Claim 1, wherein said first handrail is linked to said second handrail causing contemporaneous movement therewith.

7. The lift assembly of Claim 1, wherein both of said handrails are locked in said extended position by lock assemblies, each of said lock assemblies including:

a first link pivotally connected at one end to said platform structure;

a second link pivotally connected at one end to said other end of said first link and pivotally connected at the other end to said handrail;

a latch pin connected to one of said links; and

a latch plate associated with said platform structure and biased into engaged with said latch pin, thereby locking said handrail in said extended position.

8. The lift assembly of Claim 1, further comprising an electronic disabler for disabling the operation of either said first or said second drive assembly based on said position of said handrails.

9. The lift assembly of Claim 1, further comprising an inboard barrier pivotally connected to said lift platform at said inboard end, said inboard barrier being movable between a bridge position, a safety barrier position, and a stowable position in which said platform structure may be moved by said carriage structure between said carriage stowed and carriage deployed positions.

10. The lift assembly of Claim 9, further comprising a lever linked to said inboard barrier for effecting movement of said inboard barrier between said bridge position and said safety barrier position, said lever being movable between a first position in which said inboard barrier is in said bridge position and a second position in which said inboard barrier is in said safety barrier position, wherein said lever includes a handle portion that may be grasped by an operator to manually manipulate said lever.

11. The lift assembly of Claim 10, wherein said lever may be locked in said second position, thereby locking said inboard barrier in said safety barrier position.

12. The lift assembly of Claim 11, wherein said lever includes a projection, said lever being locked by said projection extending into an opening in said platform structure.

13. The lift assembly of Claim 10, further comprising an electronic disabler for disabling the operation of said second drive assembly based on said position of said lever or said position of said inboard barrier.

14. The lift assembly of Claim 1, further comprising an outboard barrier pivotally connected to said platform structure at said outboard end, said outboard barrier movable between a ramp position and a safety barrier position.

15. The lift assembly of Claim 14, further comprising an outboard barrier locking latch associated with one side of said platform structure proximate said outboard end, said latch including an engagement structure, and a latch engagement member associated with said outboard barrier, said latch engagement member positioned and configured to cooperate with said engagement structure for locking said outboard barrier in said safety barrier position.

16. The lift assembly of Claim 15, wherein said engagement structure is a slot and said latch engagement member is a latch pin.

17. The lift assembly of Claim 14, further comprising an electronic disabler for disabling the operation of said first or said second drive assembly based on said position of said outboard barrier.

18. In a wheelchair lift mountable on a vehicle adjacent a vehicle doorway, said wheelchair lift having a lift platform, said lift platform comprising:

a lift deck defining length-wise sides and width-wise ends;

a pair of handrails pivotally mounted on said sides of said lift deck, said handrails pivotally movable between an extended position in which said handrails extend upwardly from said lift deck, and a retracted position in which said handrails extend along said sides of said lift deck substantially parallel therewith;

a coupling linking movement of said first and second handrails; and

at least one locking assembly for locking said handrails in said extended position.

19. In a wheelchair lift mountable on a vehicle adjacent a vehicle doorway, a lift platform comprising:

a lift platform surface having an inboard edge and an outboard edge;

an inboard barrier pivotally connected to said lift platform along at least a portion of said inboard edge, said barrier movable between at least a lowered ramp position extending outwardly from said lift platform surface, and a raised, safety barrier position extending upwardly from said lift platform surface; and

a lever linked to said barrier, said lever effecting movement of said barrier between said ramp and safety barrier positions, wherein said lever includes a handle portion that may be grasped by an operator to manually articulate said barrier.

20. A wheelchair lift platform, comprising:

a lift deck defining length-wise sides and width-wise ends;

a pair of handrails pivotally mounted on said sides of said lift deck, said handrails pivotally movable between an extended position in which said handrails extend upwardly from said lift deck, and a retracted position in which said handrails extend along said sides of said lift deck substantially parallel therewith;

at least one barrier pivotally attached to one end of said lift deck, said barrier being moveable between a ramp position, a barrier position, and a stowable position in which said barrier is disposed in-between said ramp and barrier positions;

wherein movement of at least one of said handrails from said retracted position to said extended position causes said barrier to move from said stowable position to said barrier position.

21. The wheelchair lift platform of Claim 20, wherein said first or second handrail is mechanically linked to said wheelchair barrier.

22. The wheelchair lift platform of Claim 21, further comprising a coupling linking movement of said first and second handrails.

23. A wheelchair lift assembly for raising and lowering a wheelchair between two surfaces disposed at different elevations, comprising:

a wheelchair platform; and

at least one wheelchair barrier pivotally attached to one end of said wheelchair platform, said wheelchair barrier being moveable between a ramp position in which a wheelchair is permitted to enter into or exit from said wheelchair platform, and an upright barrier position in which a wheelchair is not permitted to enter into or exit from said wheelchair platform;

wherein said barrier includes an energy dissipation device for dissipating energy in the event of a wheelchair collision against said barrier when said barrier is in said barrier position, said energy dissipation device being an area of reduced strength oriented along a portion of said barrier, wherein said area of reduced strength yields when impacted by a wheelchair.

24. A wheelchair lift assembly, comprising:

a wheelchair platform having inboard and outboard edges;

at least one wheelchair barrier pivotally attached to either inboard or outboard edge of said wheelchair platform, said wheelchair barrier being moveable between a ramp position in which said wheelchair barrier extends outwardly from said end of said wheelchair platform to permit movement of a wheelchair across said inboard or outboard edge of said platform and a safety barrier position in which said wheelchair safety barrier prevents a wheelchair from inadvertent movement across said inboard or outboard edge of said platform; and

a barrier locking assembly coupled to said wheelchair platform, said barrier locking assembly having an unlocked state in which said wheelchair barrier is moveable between said ramp position and said safety barrier position and a locked state in which

said barrier locking assembly mechanically prevents said wheelchair barrier from moving from said safety barrier position to said ramp position,

wherein said barrier locking assembly includes a latch member pivotally attached to one side of said platform and biased toward said inboard or outboard edge of said wheelchair platform, said latch member defining a contact surface and a latch engagement member retaining surface, said barrier locking assembly further including a latch engagement member disposed on said barrier, said latch engagement member being configured and arranged to be engaged and retained by said latch engagement member retaining surface when said wheelchair barrier is in said safety barrier position.

25. A wheelchair lift assembly, comprising:

a lift platform having first and second ends;

at least one platform barrier pivotally attached to one end of said lift platform, said platform barrier being moveable between a ramp position in which said barrier extends outwardly from said end of said lift platform and a safety barrier position in which said barrier extends upwardly from said lift platform; and

a foot pedal mechanism that actuates said platform barrier between said ramp position and said safety barrier position.

26. The wheelchair lift assembly of Claim 25, further including a latch pivotally connected to one side of said lift platform, said latch movable between a locked platform barrier position, wherein said latch mechanically prevents said platform barrier from articulating to said ramp position, and an unlocked platform barrier position, wherein said platform barrier is freely movable between said ramp position and said safety barrier position.

27. The wheelchair lift assembly of Claim 26, wherein said latch is biased into said locked platform barrier position.

28. The wheelchair lift assembly of Claim 26, wherein said platform barrier includes a latch engagement member, said latch operable to engage and lock onto said latch engagement member when said platform barrier is in said safety barrier position.

29. The wheelchair lift assembly of Claim 25, wherein said foot pedal mechanism includes a first pedal associated with said platform barrier and a second pedal associated with one said of said ramp, wherein force applied against said first foot pedal articulates said platform barrier from said ramp position to said safety barrier position, and wherein force applied against said second foot pedal articulates said platform barrier from said safety barrier position to said ramp position.

30. The wheelchair lift assembly of Claim 29, further including a latch pivotally connected to one side of said lift platform, said latch movable between a locked platform barrier position, wherein said latch mechanically prevents said platform barrier from articulating to said ramp position, and an unlocked platform barrier position, wherein said platform barrier is freely movable between said ramp position and said safety barrier position.

31. The wheelchair lift assembly of Claim 30, wherein a portion of said latch defines said second foot pedal.

32. The wheelchair lift assembly of Claim 30, wherein said platform barrier includes a latch engagement member, said latch operable to engage and lock onto said latch engagement member when said platform barrier is in said safety barrier position.

33. The wheelchair lift assembly of Claim 32, wherein force applied to said second foot pedal decouples said latch from said latch engagement member.

34. The wheelchair lift assembly of Claim 32, wherein said platform barrier includes at least one side flange, said flange including said first foot pedal and said latch engagement member.

35. The wheelchair lift assembly of Claim 25, wherein said platform barrier automatically locks in said safety barrier position when said platform barrier is articulated from said ramp position to said safety barrier position.

36. A wheelchair lift assembly, comprising:  
a mounting structure;

a carriage moveable relative to said mounting structure in a substantially linear direction between a stowed position and a deployed position;

a platform configured to support a load, said platform including:

a) a lift deck having length-wise sides and width-wise inboard and outboard ends;

b) a pair of handrails pivotally mounted on said sides of said lift deck, said handrails pivotally movable between an extended position in which said handrails extend upwardly from said lift deck, and a retracted position in which said handrails extend along said sides of said lift deck substantially parallel therewith;

c) an inboard barrier pivotally connected to said lift deck at said inboard end, said inboard barrier being movable between a bridge position, a safety barrier position, and a stowable position in which said platform structure may be moved by said carriage structure between said carriage stowed and carriage deployed positions; and

d) an outboard barrier pivotally connected to said lift deck at said outboard end, said outboard barrier being movable between a ramp position and a safety barrier position;

a pair of linkage members pivotally coupling said platform to said carriage, said platform being movable between raised and deployed positions when said carriage has attained said deployed position;

a platform drive assembly conditionally energized for effecting reciprocal movement of said platform structure between said raised and lowered positions; and

at least one electrical disabler associated with said platform, wherein said electrical disabler disables said platform drive assembly so as to inhibit movement of said platform when one of the following conditions is present: 1) said handrails have not attained said extended position; 2) said inboard barrier has not attained said inboard safety barrier position; or 3) said outboard barrier has not attained said outboard safety barrier position.

37. The wheelchair lift assembly of Claim 36, wherein said electrical disabler includes at least one sensor in communication with said platform drive assembly to provide a control signal indicative of said position of said outboard barrier, said inboard



barrier, or said handrails, wherein movement of said platform is inhibited based on said control signal.

38. The wheelchair lift assembly of claim 36, further comprising a carriage drive assembly conditionally energized for effecting reciprocal movement of said carriage between said stowed and deployed positions, and a second electronic disabler, wherein said second electrical disabler disables said carriage drive assembly so as to inhibit movement of said carriage when said handrails are not in said retracted position.

39. A wheelchair lift assembly adapted to be affixed to a vehicle for movement of a load between raised and lowered positions, said lift assembly comprising:

a mounting enclosure attachable to said vehicle;

platform structure having opposite first and second sides and inboard and outboard ends, said platform structure being movable within said mounting enclosure between a completely stowed position and a completely deployed position;

first and second handrails pivotally mounted to said platform structure at said first and second sides, respectively, said handrails pivotally movable between an extended position in which said handrails extend upwardly from said platform structure, and a retracted position in which said handrails are in a position that allows said platform to move between said completely stowed and completely deployed positions;

an inboard barrier pivotally connected to said inboard end of said platform structure, said inboard barrier movable between at least a bridge position extending inboard from said platform structure to provide ingress/egress between said platform structure and a surface of said vehicle, a raised, safety barrier position for preventing such ingress/egress, and a stowed position in which said platform structure may be moved between said completely stowed and completely deployed positions; and

an outboard barrier pivotally connected to said outboard end of said platform structure, said outboard barrier movable between a ramp position extending outboard from said platform structure to provide ingress/egress between said platform structure and a ground surface, and a raised, safety barrier position for preventing such ingress/egress, wherein either of said ramp or said safety barrier positions of said outboard barrier allows said platform structure to move between said completely stowed and completely deployed positions.